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Mexican Project Spreads The Green Revolution

Focus on Romanian Agriculture

Foreign Agricultural Service
U.S. DEPARTMENT OF AGRICULTURE

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This week's cover:

The International Center for the Improvement of Corn and Wheat (CIMMYT), through technicians like these weighing a corn crop in the field, developed the wheat and corn varieties that sparked the Green Revolution. Next pages describe a CIMMYT project helping farmers in a selected Mexican area use Green Revolution methods to raise enough corn for cash as well as food. (Photo courtesy of The Rockefeller Foundation.)

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Test Area in Mexico Shows How Small Farmers Ca

By THOMAS B. O'CONNELL
Assistant U.S. Agricultural Attaché
Mexico City, D.F., Mexico

Farmers planting corn in the first year of Mexico's Puebla Project, just after applying fertilizer (still visible in the furrows). This 5-year experiment is aimed at helping subsistence farmers boost yields and income.

ers Can Move Into Commercial Agriculture

Mexico, through the new high-yielding corn and wheat varieties developed in its research program with the International Center for the Improvement of Corn and Wheat (CIMMYT), was a prime mover in the "Green Revolution" that is now boosting world grain output. And Mexico itself has taken the giant step to grain self-sufficiency. So it is appropriate that Mexico should also be the site for a new CIMMYT project, designed to test ways of helping small farmers who are still outside the mainstream of agricultural progress to take their own giant step and move from subsistence-type farming into the very different world of commercial agriculture.

Many such farmers throughout the world are now being squeezed out of even their small traditional local markets by larger producers. This is one of the problems raised by the very production increases CIMMYT has helped make possible; and the project it is now carrying on in Mexico's Puebla-San Martin Texmelucan Valley is an example of the kinds of solutions it is testing.

Nature and purpose of project

The Puebla Project is an experiment—now in its third year—aimed at doubling average corn yields on 50,000 farms with a total of 200,000 acres of corn land, in an area about 85 miles southeast of Mexico City.

This part of Mexico was chosen not because it is especially favorable in soil or water supply—it is merely adequate in these respects—but because it is an area of small holders where corn yields are low and have remained nearly stagnant for many years. Most of the farmers are struggling to grow one basic food crop, corn, first of all to feed their families and only secondarily as a source of cash income. (Yields of such basic food crops are generally recognized as the hardest to increase.) Average land holding in the area amounts to about 6 acres per farmer. Corn is grown on more than 70 percent of the cropland. Crops depend entirely on rainfall, which is seasonal and varies from 800 to 925 millimeters (about 31 to 36 inches) per year. Less than 40 percent of the farmers in the area had sold any of their harvest the year before. Only 12 percent of them had used credit of any kind for financing their crops.

Behind the specific goal of doubling local corn yields in 5 years, the Puebla Project has these general goals, based on a study of potential problems in underdeveloped areas—

- Finding out whether rapid and sustained increases in yields can be achieved among small farmers relying only on rainfall for water;
- Persuading these tradition-minded subsistence farmers to join the experiment toward commercial agriculture;
- Developing methods of teaching them the farming skills needed to use the yield-boosting varieties and practices.

Through its experience with the Puebla Project, CIMMYT hopes to work out a methodology that could be used on any basic food crop in any part of the world—subject, of course, to adaptation corresponding to commodity and area.

Admittedly, the Puebla Project is a small one and of relatively short duration; and it has only recently begun. Yet the results of its first 2 years are already interesting. When measured against the three general aims just listed, they begin to answer three questions.

Yields, participation, learning

Can corn yields be raised rapidly in an area like Puebla? In 1967, the year when the agronomic research for the project began, average yield for the area was 20 bushels per acre (it had been a poor year in terms of rainfall). In 1968, the first year of work with farmers in introducing improved practices, rainfall was adequate, and average yield for the area rose to 31 bushels. For the 173 acres of demonstration—or "high yield"—plots, however, yields jumped to an average 62 bushels; and when checked against those of nonparticipating farmers, they showed some individual differences as striking as that between 7 bushels per acre and 70.

This clearly seen evidence of improvement stimulated interest, confidence, and activity among the farmers. As a consequence, even though the 1969 seasonal rains were a full 2 months late in arriving, the 1969 area in high-yield plots increased to about 5,500 acres. A similar increase in the area of high-yield plots in the next 2 years—with better weather—could put the project over the top in its 5-year battle to double average corn yields.

Further, the continuation of experimental work will make possible more precise fertilizer recommendations in the future, and it is also hoped that varietal research will result in a new variety with 20 to 25 percent more yield potential. Even at the currently recommended levels of plant density and fertilization, this could mean an additional 15 bushels per acre at essentially no additional cost to the farmer.

How can the farmers be persuaded to take part? The answer that is developing is age-old: nothing succeeds like success. The 103 farmers who planted 141 demonstration plots in 1968 were key movers the next year in organizing about 125 groups of participants. Half of these were organized to receive credit and fertilizer from a private distributor and the other half to work with two public banks. The number of members per group ranges from five to more than 80, and there are some 2,600 farmers participating. About one-third of this number had worked previously with the public banks, but this was their first year of following the new technology.

How can the necessary farming skills be taught? In addition to a small group of specialists, the Puebla Project uses local farmers as field assistants. With thorough briefings on the overall goals of the project as well as on the detailed application of each new technique, these young local technicians have proved successful in communicating the necessary information to the farmers they are selected to serve. Even farmers with decades of experience in the "old ways" can be persuaded to participate and to learn the new ones if they are convinced that the technicians assigned to them

are serious and knowledgeable. The Puebla Project experience up to now indicates that a well-prepared, conscientious, self-confident technician can oversee the progress of a thousand or more farmers when they are organized into groups to receive technical assistance efficiently. By the end of 5 years, it is hoped that the new skills of the first cooperators will have been acquired by most farmers in the area.

Some details of methodology

The Puebla area has no local research station. Necessary research has all been done on the spot—that is, on individual farms within the area. This local approach was used in the choice of the commodity; in pre-project surveys of actual conditions (soils, rainfall, yield trends) and of the extent to which fertilizers, credit, and new varieties were available and in use; in choosing local assistants for training to work with the technicians.

Armed with survey results, the CIMMYT staff carried out on local farms with representative soils the same kind of experiments they would have done at an experiment station, with the same precision. To determine the most productive varieties for the area, they carried out varietal tests with new crosses, mass-selected material, and the best local varieties. They conducted experiments with several plant populations and fertilizer rates in the same design to study interactions and arrive at specific recommendations. For 1969, the fertilizer recommendation they developed was about 116 pounds of nitrogen and about 45 of phosphoric acid, with about 20,000 plants per acre. This recommendation was applied to all of the high-yield plots, with about 18 pounds of the nitrogen and all of the phosphoric acid used at planting and the rest of the nitrogen in the second cultivation. The use of fertilizer was well known in the area, but at rates only about a third this high; and only 2 percent of the farmers were applying any at planting time when the phosphorus—which does not leach down—could be placed in the root zone.

The next step—equally important—was to choose the plots to be used for the demonstrations. These selections were made both on the basis of the farmer's interest in increasing his yields and on the basis of his influence within the community. Much of the project's success thus far has depended on the rapport developed between the owners of the demonstration plots and the technicians selected to serve the area; much, too, on the individual farmer's ability to help consolidate and lead other farmers in the groups. All the farmers who attended the demonstration programs where the recommended farm practices were shown in 1968 were potential participants in the program for the following year.

Measuring the results

In the Puebla Project, each demonstration plot is evaluated separately for statistical purposes. Check plots for comparison with the demonstration plots are provided gratis by neighbors not participating. At harvest, two kinds of evaluations are made: a sampling of farmers' fields throughout the area to estimate year-to-year changes in average yields and a sampling of the high-yield plots to estimate their average yields.

Backing up the research into recommended practices and the training of the technicians to explain the reasons and methods for using them, there have been coordinated efforts with public and private agencies, to assure that the recommended inputs are actually and easily available at the local level and that there is adequate credit. Crop insurance has been arranged for, and farmers have assurance that there will be an adequate market for any surplus production.

Mainland China Purchasing More Free World Wheat

Mainland China, one of the world's largest importers of wheat, is increasing its purchases of wheat in the current year. On September 26 the Canadian Trade Minister, Jean-Luc Pepin, announced that the Canadian Wheat Board had sold Mainland China 86.2 million bushels (2.3 million metric tons) valued at Can$135 million. Shipment is to begin in October.

The last previous Canadian sale to China was made in November 1968 and included 56 million bushels (1.5 million tons) for December 1968 to July 1969 delivery. That sale completed a 3-year agreement which called for between 168 million and 280 million bushels (4.6-7.6 million tons). The most recent sale was not under a long-term agreement.

Mainland China also has wheat scheduled to arrive from France and Australia during 1969-70. In March of this year, France sold China 800,000 tons; actual shipments against this contract did not begin until July. In February, Australia sold China 82.1 million bushels (2.2 million tons) for shipment February 1969 to March 1970. Australian exports to China in the February to June period of 1969 totaled 609,000 tons, leaving 1.6 million tons to be exported in 1969-70.

Known export commitments to Mainland China for July 1969 onward (including amounts outstanding under previous contracts) total over 5 million tons. This represents a 1.5-million-ton gain over the level of exports to China in the 1968-69 marketing year and a million-ton gain over the level of 2 years ago. This increase in purchases by Mainland China comes despite claims of an increase in wheat production. However, the combination of a decline in production and decreased imports last year could have reduced stocks and the increased take in wheat may be needed to replenish these.

WORLD WHEAT AND FLOUR EXPORTS TO MAINLAND CHINA

Year beginning July	Canada	Australia	France	Argentina	Total
	1,000 metric tons	*1,000 metric tons*	*1,000 metric tons*	*1,000 metric tons*	*1,000 metric tons*
Shipments:					
1963	1,004.8	2,543.1	221.5	988.0	[1] 5,085.1
1964	1,758.2	2,252.5	1.3	598.1	4,610.1
1965	2,052.9	1,970.7	38.2	2,216.1	[2] 6,311.8
1966	2,464.9	2,164.3	73.2	323.5	5,025.9
1967	1,367.4	2,416.2	363.2	—	4,146.8
1968 [3]	2,127.2	1,182.1	257.5	—	3,566.8
Commitments:[4]					
1969	2,630.0	1,625.0	800.0	—	5,055.0

[1] Includes 311,700 from Mexico and 16,000 from the USSR. [2] Includes 33,900 from Italy. [3] Preliminary. [4] Based on contract amounts outstanding plus new contracts, but not including contract tolerances. Generally, Mainland China receives the full tolerances, i.e., plus 5 to 10 percent. The full Canadian contract has been included although shipments may extend beyond June 1970.

—James P. Rudbeck
Grain & Feed Division, FAS

News from the attache

Boost for Hard Wheat Varieties In Australia

Australia's Wheat Board recently endorsed semihard wheat production in southwestern New South Wales, traditionally a soft wheat area with protein levels ranging from 9 to 10 percent. Northern New South Wales is already one of the country's major hard wheat areas. This is Australia's latest concession to producer demands that production of higher protein wheats for export be increased. Export markets are more quality conscious and demand better wheats than in the past; also, many markets are becoming self-sufficient in filler-type low-protein wheat.

Experimentation area

Previously, marketing authorities had encouraged planting of soft wheats only in this region of New South Wales, in order to maintain a relatively homogeneous f.a.q. sample for certain special purpose markets, which require supplies of a distinct variety with a maximum protein of, say, 9 percent. Also, it was generally believed that semihard or hard types would not yield acceptable quality wheat in this area; however, with the improvement in soil fertility after relatively long pasture phases, some of the growers are now producing wheats with protein content of 12 percent and higher.

During the past 2 years, a number of growers in the area have been experimenting with the harder varieties. They received encouragement from the Committee on Wheat Production and Marketing, which stated in its October 1968 report that hard wheats produced in the future should be considered for use in the central and southern zones. Increasing demand in Japan and other countries for this type of wheat, which is still classed and priced as soft f.a.q., seems to have vindicated this judgment.

New varieties developed

Although most varieties grown in southern districts last season were still soft wheat (Heron, Olympic, and Robin), a large area of the hard variety Gamenya, which has good rust resistance and wide geographical adaptability, was planted. Also, breeders at the Wagga Research Institute are now developing special varieties of a hard or semihard nature for the area, and reportedly they have achieved good results in genetically transforming some of the traditional soft wheats into hard ones.

Growers are already planning a campaign to induce the wheat handling authorities to provide separate receival points for these types of wheat, and so to pay growers a premium. During mid-August they formed the Southern Hard Wheat Promotion Council.

Accordingly, it may be expected that the trend will be away from the soft wheats formerly predominant; that over the next few years, the New South Wales f.a.q. sample will show a steady upward trend in protein level, and the interest in hard wheats will grow.

New Formula for Australian Peanut Imports

Despite strong pressure from Australian oil crushers for duty-free entry of all peanuts required to offset the shortfall in local production this year, the Commonwealth authorities have evolved a new formula on imports to safeguard the local industry and prevent any buildup of imported stocks which could affect the sale of the 1969-70 peanut crop.

The Queensland peanut crop harvested in 1969 is expected to provide approximately one-third of crushers' requirements. On this basis about two-thirds of normal domestic requirements will have to be imported this year. After consultations among the Departments of Customs and Excise, Primary Industry, Trade and Industry, and the Queensland Peanut Marketing Board, it was decided to admit half of the necessary imports under by-law (duty-free) and half at the full tariff rate of 6.7 Australian cents per pound. It is thought that the average landed cost of imported peanuts at current world prices will then approximate the price normally charged to crushers for domestic peanuts.

After the requirements of each processor for the period April 1, 1969, to March 31, 1970, has been established, one-third of the total may be imported under by-law entry freed of duty, and the balance of imports would be dutiable at the general tariff rate of 6.7 cents. Duty is to be paid initially on all imports, and appropriate refunds will be made after March 31, 1970, when actual usage by each processor has been clearly established. Under the new scheme peanuts have to be imported before January 31, 1970, and must have been processed by March 31 of that year.

The formula is expected to maintain reasonable supplies of peanuts for domestic requirements without in any way interfering with the sale of next season's crop. However, it is a significant departure from previous practice, as in earlier years all the peanut imports have been admitted duty-free.

Wheat Research Program

The Australian Minister for Primary Industry, Mr. Anthony, announced recently that he had approved the expenditure of Commonwealth funds amounting to $990,973 for wheat research in 1969-70. The money will be provided under the Wheat Research Scheme financed jointly by the Commonwealth and the wheat industry. The overall expenditure from Commonwealth and industry sources will be approximately $2 million.

The Wheat Industry Research Council program will be directed to a broad field of research in wheat production, wheat storage, and wheat quality. It will include studies on plant nutrition, wheat diseases, and associated breeding programs, the control of root nematode and root rots, grain storage and flour quality. Support will also be provided for research into various economic aspects of the industry and postgraduate training in wheat research and extension work.

Funds for wheat research are raised by a levy on wheat delivered to the Australian Wheat Board, with a matching contribution by the Commonwealth. Funds raised by growers are allocated by State Wheat Industry Research Committees for separate research programs within each State.

South African Wool Production Is Increasing

Wool is South Africa's most important single agricultural export and during the last 5 years has contributed more than 30 percent to the total agricultural export revenue. This year, exports are up and production has increased. South Africa began the 1968-69 season with a carryover of about 8 million pounds of wool and total production for the season is estimated at about 327 million pounds. This includes 312 million pounds of shorn wool—an increase of about 3 million pounds over the previous year's level—and 15 million pounds of wool on skins. About 20 million pounds of the shorn wool is from karakul lambs.

Sheep numbers increased by about 0.6 million, raising the total to approximately 37.5 million during 1968. A further increase is expected in 1969. However, despite rising sheep numbers South African sheep producers have not made much progress in their effort to increase per capita wool production.

The wool-producing areas experienced a bad drought during 1968 and as a result farmers had increased feed expenses. The effects of the drought are expected to show up in a lower shorn-wool production figure for the 1969-70 season. Present estimates are for 304 million pounds of shorn wool—a drop of 8 million pounds from the 1968-69 figure.

Sheepmen welcomed the rise in the market price for wool as prices were from 3 to 5 percent higher than during 1967-68. Although karakul wool prices were below production costs, an improved market is anticipated during the new season which began in September 1969.

Total exports of wool are expected to be about 314 million pounds for the 1968-69 season—an increase of about 13 million pounds over the 1967-68 export figure. The wool export revenue, second only to that of gold, increased by 9.9 percent in value in the 10-month period July 1968 to April 1969. Total export revenue of wool is expected to top the $140 million mark.

Chief importers of South African wool are France, Britain, and Germany. In the past year Italy has shown the largest increase in purchases because of the revival of the Italian textile industry. Japan, Belgium, and Portugal have also stepped up their purchases and wool shipped to Spain rose by 16 percent. Exports to the United States fell by about 50 percent or 50,419 bales because most of the apparel wool is dutiable and consumption has been dropping. Also there is a strong tendency to keep the mill level stocks of apparel wool down. In spite of this drop the value of South African grease wool shipments rose by $10.6 million.

Domestic raw-wool consumption is expected to be about 28 million pounds during 1968-69 and in view of South Africa's present industrial boom this figure is expected to double within the next 5 years. South Africa still imports most of its woolen fabrics—about 12 million pounds of wool will be imported during 1968-69—mainly from New Zealand. Most of the wool is used in manufacturing carpets. Because of the hot climate South African consumers still prefer the lightweight type of fiber like cotton. Wool products are also too expensive for many consumers. However, the South African Wool Board is stepping up promotion work to attract new customers. Based on dispatch from WILLIAM R. HATCH

U.S. Agricultural Attaché, Pretoria

Soviet Agricultural Exports Still Rising in 1968

Soviet exports of agricultural products continued their rapid rise during calendar year 1968 despite the fact that 1967 was not a particularly good production year. Grain output was down in 1967, cotton production was unchanged from 1966, and the increase in oilseed output was not especially large. In 1968 grain output rose considerably which should boost 1969 grain exports. Cotton and oilseed output did not change between 1967 and 1968, but the growth in 1968 exports of these commodities indicates that exportable supplies remain sizable.

During 1968, grain exports declined somewhat because of a 700,000-ton drop in wheat exports. However, feedgrain exports rose about 200,000 tons. Cotton exports increased slightly in 1968 and were 100,000 tons above the 1965 level.

Exports of sunflower oil were more than three times the 1965 level. But, according to Soviet data, the average realized price per ton has fallen steadily in recent years from 267 rubles per metric ton in 1965 to 185 rubles per metric ton in 1968. Therefore, although sunflower oil exports in 1968 were 44,000 tons above the 1967 level, earnings were down about 20 million rubles. Soviet exports of sunflowerseed reached 360,000 tons in 1968, over four times the 1965 level.

Butter exports continued their steep rise and were 75 percent above the 1965 level. A major increase in domestic consumption of butter plus expanded exports should have reduced some of the large butter stocks. —By HARRY E. WALTERS

Foreign Regional Analysis Division, ERS

USSR AGRICULTURAL EXPORTS

Item	1965		1966	
	Quantity	Value	Quantity	Value
	1,000 metric tons	*Million rubles*[1]	*1,000 metric tons*	*Million rubles*[1]
Cotton	458	301	508	331
Wheat and flour (grain equiv.)[2]	2,005	117	3,197	196
Feedgrains	2,631	148	476	26
Sunflower oil	221	59	428	107
Sunflowerseed	84	10	142	18
Oilcake and meal	129	10	391	28
Butter	43	35	54	41
Sugar	604	44	993	60
	1967		1968	
	Quantity	Value	Quantity	Value
	1,000 metric tons	*Million rubles*[1]	*1,000 metric tons*	*Million rubles*[1]
Cotton	534	336	554	364
Wheat and flour (grain equiv.)[2]	5,767	385	5,079	338
Feedgrains	628	35	830	44
Sunflower oil	670	152	714	132
Sunflowerseed	305	36	361	43
Oilcake and meal	388	29	325	24
Butter	63	45	76	49
Sugar	1,032	59	1,300	80

[1] One ruble equals US$1.11 at the official Soviet exchange rate. [2] Grain extraction rate equals 78 percent. Source: *Foreign Trade*, No. 8, Moscow, 1969, pp. 56-58, and *Vneshnyaya Torgovlya* SSSR for 1967, 1968, and previous issues.

Growth Potential in Romanian Agriculture

By LYNN S. BICKLEY and DAVID M. SCHOONOVER
Foreign Regional Analysis Division, ERS

Streams of cars on the boulevards of Bucharest, rows of high-rise apartments at Ploiesti, and smoking steel mills at Hunedoara attest to the emergence of Romania into the urbanized, industrialized world. But, the country's agricultural potential is still largely untapped although agriculture employs about 57 percent of the labor force in this country of approximately 20 million people, and in 1967 accounted for 29 percent of national income and 41 percent of exports.

Romania's relatively large area of arable land, fertile soils, and moderately favorable rainfall pattern establish possibilities for a high level of agricultural production. Next to Poland, it has the highest amount of arable land of any country in Eastern Europe. About 62 percent of the total area is agricultural and 44 percent, or 25.9 million acres, is arable.

Although crop yields and livestock productivity have remained among the lowest in Eastern Europe, a sharp upturn in these indicators beginning in the mid-1960's suggests that the developmental process is underway. The growth of agricultural output since 1965 has been well above the East European average, and the average level of production during 1966-68 was 21 percent above that of the preceding 3 years.

Agriculture lags behind industry

Romania's GNP (in constant prices) increased at an annual rate of 6.3 percent from 1960 to 1967 while per capita GNP, estimated at $939 in 1967, was higher than in Spain or Greece. However, agricultural production has increased only one-half as much as the growth of GNP in the 1960's.

During a series of 5-year plans, industry—especially the capital goods industry—has received priority allocation of investments while agriculture received only 15 percent of investments in 1967.

A narrowing of the gap between agricultural and industrial growth rates has been proposed. Draft directives for the 1971-75 Five-Year Plan call for an 8.5- to 9.5-percent average annual increase in industrial output—compared with an actual 13 percent annual increase from 1960 to 1967—and a 5.0- to 5.5-percent increase in agricultural output—compared with an increase of a little more than 3 percent during the earlier period.

Collectivization and reform

Romania has been slow to adopt economic reforms and decentralization. In 1967 a program of modest economic reforms was approved by the Communist Party and a readjustment of prices has been proposed to better aline retail prices with costs of production. At present the government uses credit and guaranteed prices to influence production decisions of collective farms and sets prices of agricultural commodities.

The government took several steps in early 1969 to ease credit and investment conditions for collective farms. State farm investments are financed through the state budget and their specialization is closely controlled by the government through the Higher Council of Agriculture. A new system of bonuses based on profitability was introduced in 1968 to spur production.

Collectivization proceeded more slowly in Romania than in the rest of Eastern Europe (except Poland and Yugoslavia where private farms still predominate) and was not completed until 1962. In 1967, collective farms averaged 4,757 acres, and contained 61 percent of the agricultural area and 75 percent of the arable land. State farms averaged 7,022 acres in 1966, but as the result of an administrative reorganization in 1967, they increased notably to an average size of 15,070 acres, utilizing 30 percent of the agricultural land and 20 percent of the arable land. The remaining agricultural area—primarily located in mountainous areas—is privately farmed.

Romania is the only East European country which retains a system of mechanization enterprises to service the collective farms. The mechanization of agricultural operations has improved sharply in the 1960's. In 1967, each tractor (15 hp.

Below, signs above open-air market in Bucharest show U.S. presence; right, children tending sheep in Transylvania.

units) served 168 acres of arable land, compared with 390 acres in 1960. However, Romania still remains the least mechanized of any East European country having socialized agriculture. In 1967 only two-thirds of the grain on collective farms was harvested by machine.

Fertilizer usage began to increase strongly in the mid-1960's, but remains the lowest in Eastern Europe. About 38 pounds per acre were applied to arable land in 1967.

Plans call for major expansion of irrigation, reaching 2.5 million acres in 1970, but completion of projects is well behind schedule. About 1.4 million acres were irrigated by the end of 1968 and an increase of 365,700 acres was scheduled for 1969.

Grains and oilseeds

Grain occupies 63 percent of Romania's arable land with 31 percent and 28 percent of total arable land devoted to corn and wheat, respectively. Corn production averaged 5.9 million metric tons during 1961-65 and hit a record 8.0 million tons in 1966, but droughts in 1967 and 1968 reduced output to an average of about 7.0 million tons. Production gains have been a result of yield increases, as area has declined slightly.

Wheat production averaged 4.3 million tons during the 1961-65 period and peaked at 5.9 million tons in 1965. Output was above average during 1966 and 1967, but a severe spring drought reduced 1968 output to 4.8 million tons. Favorable conditions for the 1969 crop are expected to result in a near-record performance.

In view of the probable developments in farm inputs and practices, Romania's grain output could easily reach 16 million tons by 1975, compared with 12.8 million tons in 1968 and a record 13.9 million tons in 1966. Projected corn production of about 10 million tons would result from a yield of close to 43 bushels per acre—less than current yields in neighboring Yugoslavia and Bulgaria, but about 4 bushels above the previous Romanian record. Projected wheat output of about 5.5 million tons is based on 34-bushel yields. As with corn, planned wheat production is below current yields in Yugoslavia and Bulgaria, but about 4 bushels above the previous peak. If by 1975, Romanian yields achieved the Yugoslav level of 1967, then grain output could reach almost 18 million tons (approximately the target of the Romanian draft plan for 1971-75), and if the Bulgarian level of output were achieved, grain output could exceed 20 million tons.

Sunflowers, potatoes, vegetables, and fruits are also major crops. Romania is Eastern Europe's leading producer of sunflowers, accounting for almost one-half of total production. Output of 730,000 tons in 1968 was about 45 percent above the 1961-65 average. Soybean production has greatly expanded since 1966 from previously negligible levels.

Livestock production

Animal productivity is low in Romania, as poor breeding stock, inadequate feed, and inefficient methods have all hampered growth. In contrast to crop production which is largely concentrated on the state and collective farms, the household plots and private sector contribute over half of Romania's livestock product output. The mountainous region of Transylvania is an important area for grazing.

Substantial gains have been made in livestock numbers during the 1960's but per capita availabilities of livestock products still are at very low levels, ranking only above Yugoslavia in Eastern Europe. The livestock inventory in January 1969 included 5.1 million head of cattle, 5.9 million hogs, 14.3 million sheep, and 47.6 million poultry. Hog numbers jumped 40 percent from 1960 to 1965, but were subsequently reduced to 36 percent above the 1960 level. Poultry, cattle, and sheep numbers were up 29, 28, and 15 percent, respectively since 1960. Total output of meat declined 4 percent to 825,000 tons in 1968, but still showed a 37-percent gain over the 1960 level.

In 1967 milk yields averaged 3,818 pounds per cow—up 30 percent from the 1960 level but still quite low. The average rate of lay of 92 eggs per hen was also quite poor. The current attempt to develop soybean production in Romania and the recent purchases of U.S. soybean meal together with increased grain output will probably result in better livestock productivity.

Trade — exports increase

Romania is a member of the Council for Mutual Economic Assistance (CEMA or COMECON), the cooperation and trading association of East European countries and the Soviet Union, but has displayed increasing economic independence since 1963. In late 1968 Romania applied for membership in GATT. Major trading partners and their share of total trade turnover in 1967 were: USSR—28 percent; West Germany—12 percent; Italy—6 percent; and Czechoslovakia—6 percent.

About one-half of total trade was with Communist countries, approximately 54 percent of exports and 46 percent of imports. Although Romania generally has run a deficit in total trade during the 1960's, the value of agricultural exports has far exceeded the value of imports. In 1967, agricultural exports were valued at $568 million (41 percent of total exports), and agricultural imports were valued at $179 million (12 percent of total imports). Grain exports, which dominate Romania's agricultural exports, fell in the 1.0-million to 1.5-million-ton range from 1961 through 1966, but hit a record 2.3 million tons in 1967. In 1968 exports declined to 1.6 million tons, reflecting the impact on the corn crop of drought conditions in both 1967 and 1968. In 1967 corn exports were estimated at more than 1.5 million tons, bringing Romania into strong competition with France as Europe's leading corn exporter. Wheat exports have been in the range of one-half million tons in recent years. The expected gains in grain production probably will result in increased exports. Exports matching the previous record of 2.3 million tons (chiefly corn, but also some wheat) are probable if production reaches 16 million tons.

Exports of edible vegetable oils (primarily sunflowerseed oil) have increased rapidly in recent years, reaching 116,000 tons in 1968. Other important exports include fresh and canned fruits and vegetables, edible animal fats, and eggs.

Cotton dominates Romania's agricultural imports, accounting for more than one-third of the total value in 1967. Other major imports are hides and skins, rice, and citrus fruit. The United States exports a lower value of agricultural commodities to Romania than to any other Eastern European country, and does not grant most-favored-nation status to Romania. In 1968 U.S. agricultural exports to Romania consisting largely of cattle hides and soybean meal were valued at $1.1 million. Cattle hide exports were lower than in previous years, and soybean meal was a newcomer to the export list. U.S. imports from Romania were valued at $1.3 million and consisted largely of cheese and poppy seed.

Angolans See U.S. Beef Cattle

In the 50-year-old city of Nova Lisboa last month, U.S. Hereford and Santa Gertrudis cattle were featured attractions at the 6th Agricultural and Livestock Fair in Angola (Aug. 30 to Sept. 30).

Like Mozambique, where U.S. cattle were also shown this summer (see *Foreign Agriculture* Aug. 18, 1969) Angola is looking for breeding animals to upgrade the quality of beef produced by local herds. Cattlemen and government officials alike were pleased with the 50 animals shown by the Americans. The exhibited cattle were chosen from a lot of 200 shipped from the United States in May for the Mozambique and Angola shows.

Left, Portguese Government official Francisco Boaventura (left) with Provincial Secretary R. Dias Boas, who opened U.S. exhibit. Below, Caso do Cowboys *headquarters.*

Herefords and Santa Gertrudis—an entirely new breed to the Angolans—were penned outside under the pines within red-white-and-blue clapboard fences. Not far away was the striking USA tower that identified the U.S. pavilion from all over the fairgrounds. A *Casa do Cowboys* (Cowboy House) served as tent headquarters for USDA and American breed association officials, who talked business with the visiting ranchers and handed out literature.

Thousands of Angolan farmers and government officials went through the U.S. exhibit, among them Provincial Secretary R. Sousa Dias. He commented, "This exhibit of yours effectively shows us the quality of your cattle and demonstrates to us your interest in our livestock development."

Several of the exhibited cattle were later sent to the Agricultural Experiment Station outside Nova Lisboa; the others —along with Holsteins—had been sold to local farmers far in advance of the exhibit.

American Wheat Food Specialist to Japan

Wheat Associates Food Consultant Beverly G. Anderson developed recipes and held cooking demonstrations for chefs and housewives in Japan, Taiwan, the Philippines, and Korea this summer. Wheat Associates—with support from the Foreign Agricultural Service—sponsored the August tour as part of an on-going program to increase the consumption of wheat foods in Asia.

In Japan her recipes and menu suggestions were for sandwiches adapted especially to food and flavors acceptable to Japanese taste and eye appeal.

"Sandwiches can be a complete meal—quickly and easily" titled her demonstration to an overflow audience in Tokyo at a meeting of the Flour Millers Association.

Mrs. Anderson also appeared on several shows with popular television chef Gyosai Tamura (see photo below).

Australia Sells Honey

Sales of Australian honey to Japan—a potentially strong customer of U.S. honey—are expected to rise by approximately 300 tons or more during 1969-70 to about 700 tons, according to the Australian Honey Board. An agreement has been negotiated with a Tokyo packer to pack Australian bulk honey into specially designed plastic containers for distribution through leading supermarket outlets.

The Board also reported a growing interest in Australian honey in Canada, while moves are being made to increase promotion in Scandinavia and Western Germany. Although the United Kingdom is still Australia's best customer for honey, steps to diversify the export market are being taken now in anticipation of losing its duty-free Commonwealth Preferential status if Britain enters the Common Market.

—Based on dispatch from Office of U.S. Agricultural Attaché, Canberra

Study reveals

Loading and Shifting Alter Soybean Grades

By C. C. SPILSBURY
Fats and Oils Division
Foreign Agricultural Service

For some time now, U.S. soybean shippers have been receiving complaints of high foreign material content in deliveries overseas. Even though strict quality standards are met at U.S. ports, foreign buyers complain that soybeans unloaded for them sometimes have as much as five times the foreign material content tolerable for the grade of soybeans ordered. Others, whose soybeans come out of the same ship, find hardly any foreign material at all. Their purchases are virtually free of chaff, seeds, rocks, broken beans, and other trash.

Test shipments

To solve the puzzle, officials at USDA's Consumer and Marketing Service, the Foreign Agricultural Service, and the Soybean Council of America made a survey of the problem this year. Their study involved shipments of soybeans to German importer Alfred C. Toepfer and Co., who agreed to help USDA with the quality survey.

Two soybean cargoes were tested. A total of 465,749 bushels (12,701 metric tons) of No. 3 and No. 4 soybeans (mixed) went into the ship M/V *Eelko* into holds 2, 5, 9, and deep tanks. Another 347,300 bushels (9,440 tons) of No. 3 soybeans were loaded into the M/V *Tete Oldendorff* in holds 1, 3, and 7.

The vessels were loaded by gravity belts under the close supervision of J. L. Helton, district director of the Grains Division at New Orleans. Soybeans came from the St. Charles Elevator at Destrehan and the public grain elevator at New Orleans—largest and most modern elevators in the area.

Based on weighted averages, soybeans in the *Eeklo* were 3.32 percent foreign content in holds 2 and 2.58 percent in hold 5 and the deep tanks. (Maximum tolerance foreign materials for No. 3 yellow soybeans is 3 percent.) Soybeans aboard the *Oldendorff* had an average foreign material content of 2.53 percent.

The vessels left for Hamburg in November 1968. Discharge in Germany—also carefully observed by Mr. Helton—was done with pneumatic suckers, 10-inch pipes with removal capacity of 100 metric tons per hour from the ships.

Probes were put into the sales hoppers at the point of discharge, each sample representing 20 tons and all samples mixed before evaluation. The *Eeklo* cargo as a whole averaged 4.15 percent foreign material—0.83 and 1.57 percent higher than the averages at the time of loading. Percentages of individual samples ranged from 0.9 percent to as high as 15.4 percent foreign materials, with the highest percentages on top of the hold.

Upon discharge, the soybeans from the *Oldendorff* averaged 2.76 percent—0.23 percent higher than the average in New Orleans. Individual samples ranged from 1.6 percent to 5.6 percent, and again the higher percentage lots were on top. Comparative analysis also showed a higher percentage of splits and moisture in samples taken from the top of the hold.

Results of the test

The survey revealed a number of causes for the uneven distribution starting back in New Orleans where the beans were loaded. As the soybeans poured out of the elevator, conveyor belts split the stream into two holds at one time, dividing foreign material unevenly between the two holds. Gravity fall loading also may have broken some of the soybeans into particles which would then be graded as foreign material.

Ship movements

Natural shifting of the soybean cargo en route made the light foreign materials float to the top of the loads while heavier rocks and stones sank. Further, the pneumatic unloading equipment in Hamburg may have damaged and broken the soybeans, particularly when the suckers were not used to full capacity.

Evaluation of the test samples at discharge was done by the U.S. Department of Agriculture Board of Appeals and Review in Beltsville, Maryland. Grading factors considered were test weight per bushel, moisture, and damaged kernels. The Board also made determination of the total of heat-damaged kernels; weevils; black, brown, or bicolored soybeans; and foreign materials in the test cargoes.

Men's Wear in "Cotton Casuals '70"

The International Institute for Cotton has just released its "Casual Cottons '70" collection of men's leisure wear. The 1970 collection—the sixth put out annually by the Institute—was enthusiastically received in Cologne in August when it was presented to about 200 journalists and important manufacturers from 15 countries at the International Men's Wear Trade Fair.

The photo at right is from IIC's brochure, which is being sent to thousands of leading garment makers and retail stores in Western Europe. The cotton garments in the brochure are reproductions selected by manufacturers from the ideas of European designers Tom Gilbey from Great Britain, Jacques Gross from France, and Sighsten Herrgaard from Finland.

Cotton fabrics are being publicized at the trade and consumer levels as the best action fabrics for leisure and sports activities. This type of generic advertising benefits cotton growers in the United States, which is a member of IIC.

CROPS AND MARKETS SHORTS

U.S. Cotton Exports Low

Raw cotton exports from the United States totaled 147,000 running bales in the first month (August) of the 1969-70 marketing year—down sharply from both the 278,000 bales shipped in July and also the 213,000 bales in August 1968. Exports to the European countries were less than one-half the volume shipped to those countries in the same month last year.

U.S. COTTON EXPORTS BY DESTINATION
[Running bales]

Destination	Year beginning August 1				
	Average			Aug.-July	
	1960-64	1967	1968	1968	1969
	1,000 bales	*1,000 bales*	*1,000 bales*	*1,000 bales*	*1,000 bales*
Austria	23	1	0	0	0
Belgium-Luxembourg	121	45	30	2	2
Denmark	14	10	1	(1)	0
Finland	17	11	3	0	(1)
France	319	148	88	7	1
Germany, West	269	100	31	3	4
Italy	345	253	62	7	2
Netherlands	110	36	19	1	1
Norway	13	7	5	1	0
Poland	125	77	106	1	0
Portugal	21	9	8	(1)	1
Spain	74	7	5	1	(1)
Sweden	81	75	51	1	1
Switzerland	74	60	32	3	(1)
United Kingdom	244	125	48	3	2
Yugoslavia	112	67	54	0	0
Other Europe	17	24	7	1	1
Total Europe	1,979	1,055	550	31	15
Algeria	9	13	27	0	0
Australia	61	17	0	0	(1)
Bolivia	7	0	0	0	0
Canada	353	142	108	7	10
Chile	18	1	(1)	0	(1)
Colombia	3	0	(1)	0	0
Congo (Kinshasa)	6	13	0	0	0
Ethiopia	9	22	9	1	1
Ghana	1	12	17	1	1
Hong Kong	148	299	194	33	6
India	314	342	174	3	29
Indonesia	40	70	105	0	13
Israel	15	4	1	(1)	0
Jamaica	4	1	2	0	0
Japan	1,192	1,103	536	59	20
Korea, Republic of	261	351	447	38	24
Morocco	12	35	19	0	(1)
Pakistan	14	18	1	0	0
Philippines	123	154	119	10	3
South Africa	41	23	9	1	(1)
Taiwan	209	378	259	17	17
Thailand	34	90	66	8	0
Tunisia	2	14	0	0	0
Uruguay	6	0	0	0	0
Venezuela	8	(1)	(1)	0	0
Vietnam, South	46	24	62	2	8
Other countries	9	25	26	2	0
Total	4,924	4,206	2,731	213	147

[1] Less than 500 bales.

U.S. Tobacco Imports Up in August

General imports (arrivals) of unmanufactured tobacco during August 1969 were 12.1 million pounds, compared with 5.8 million pounds imported during August a year ago. The value at $4.3 million was also higher than the $2.7 million in August 1968, and the prices per pound averaged 36 cents and 46 cents respectively. The increase included all categories of leaf with the exception of stems.

Although August arrivals of unmanufactured tobacco rose sharply, the cumulative imports for the first 8 months (January-August) of the current calendar year were about the same as in the same period last year. A total of 191.0 million pounds valued at $101.3 million was imported, compared with 191.3 million pounds valued at $111.6 million during January-August 1968. Largest percentage increases were recorded in flue-cured and burley imports, which at 11.7 million pounds were 58 percent above the cumulative imports last year. The Republic of Korea with 6.4 million pounds and Argentina with 1.7 million pounds were the first and second largest suppliers of this type leaf. Oriental cigarette leaf continues to lag about 9 percent compared with last year.

U.S. IMPORTS OF UNMANUFACTURED TOBACCO (GENERAL)

Period and kind	1968		1969	
	Quantity	Value	Quantity	Value
	1,000 pounds	*1,000 dollars*	*1,000 pounds*	*1,000 dollars*
January - August:				
Cigarette leaf (flue & burley)	7,373	2,209	11,657	3,690
Cigarette leaf, other	135,990	92,006	123,630	78,208
Cigar wrapper	372	1,428	531	1,596
Mixed filler & wrapper	114	590	239	987
Cigar filler, unstemmed	23,305	7,191	27,800	8,538
Cigar filler, stemmed	2,226	2,802	1,569	1,851
Scrap	21,505	5,325	24,531	6,428
Stems	445	29	1,001	22
Total	191,330	111,580	190,958	101,320
August:				
Cigarette leaf (flue & burley)	109	33	2,305	775
Cigarette leaf, other	760	573	1,421	729
Cigar wrapper	42	126	96	301
Mixed filler & wrapper	45	200	(1)	1
Cigar filler, unstemmed	2,192	709	4,984	1,602
Cigar filler, stemmed	195	268	231	279
Scrap	2,249	735	3,036	665
Stems	183	15	0	0
Total	5,775	2,659	12,073	4,352

[1] Less than 500.
Bureau of the Census.

U.S. Leaf Exports Down in August

Exports of unmanufactured tobacco in August 1969 totaled 41.1 million pounds with a value of $37.4 million. Comparable figures for 1968, which were exceptionally high for the month, were 63.9 million pounds with a value of $52.7 million.

Shipments of both flue-cured and burley were down substantially from August a year ago, but continued at a

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relatively high level compared with the average for August during 1960-64. Shipments of flue-cured and burley in August last year were at a record level for burley and near a record for flue-cured.

Cumulative leaf exports for January-August 1969 were down about 50 million pounds or 14 percent in quantity and $32 million or about 11 percent in value from the same period a year ago. Flue-cured exports were down 16 percent, mostly in shipments to the United Kingdom and West Germany, but this decrease was partially offset by a 20-percent increase in shipments of burley.

Exports of tobacco products were also down in volume for January-August, with all products indicating some loss from the same period of 1968. The cumulative value of exports remained about steady with $102.7 million in January-August 1969, compared with $102.4 million in the same period of 1968.

U.S. EXPORTS OF TOBACCO PRODUCTS

Kind	August		January-August		Change from 1968
	1968	1969	1968	1969	
					Percent
Cigars and cheroots *1,000 pieces*	5,225	7,665	45,181	44,661	— 1.2
Cigarettes *Million pieces*	3,088	2,693	16,875	16,563	— 1.8
Chewing and snuff *1,000 pounds*	7	3	185	22	—88.1
Smoking tobacco in pkgs. *1,000 pounds*	158	94	925	705	—23.8
Smoking tobacco in bulk *1,000 pounds*	2,601	3,352	13,727	13,204	— 3.8
Total declared value *Million dollars*	18.9	18.5	102.7	102.4	— 0.3

Bureau of the Census.

U.S. EXPORTS OF UNMANUFACTURED TOBACCO
[Export weight]

Kind	August		January-August		Change from 1968
	1968	1969	1968	1969	
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*Percent*
Flue-cured	43,315	28,441	260,948	218,696	—16.2
Burley	8,272	5,063	28,135	33,648	+19.6
Dark-fired Ky.-Tenn.	3,593	1,700	14,045	11,015	—21.6
Va. Fire-cured [1]	571	674	3,008	2,640	—12.2
Maryland	1,585	770	8,172	6,715	—17.8
Green River	5	1	484	428	— 9.7
One Sucker	6	90	204	258	+26.5
Black Fat	164	101	1,609	594	—63.1
Cigar wrapper	176	163	3,052	1,669	—45.3
Cigar binder	172	58	1,983	470	—76.3
Cigar filler	20	22	250	414	+65.6
Other	6,060	4,051	29,808	24,531	—17.7
Total	63,939	41,134	351,688	301,078	—14.4
	Mil. dol.	*Mil. dol.*	*Mil. dol.*	*Mil. dol.*	*Percent*
Declared value	52.7	37.4	297.6	265.6	—10.8

[1] Includes sun-cured.
Bureau of the Census.

Weekly Report on Rotterdam Grain Prices

Current prices for imported grain at Rotterdam, the Netherlands, compared with a week earlier and a year ago, are as follows:

Item	Sept. 29	Change from previous week	A year ago
	Dol. per bu.	*Cents per bu.*	*Dol. per bu.*
Wheat:			
Canadian No. 2 Manitoba	1.91	+1	2.13
USSR SKS-14	1.76	0	(1)
Australian Prime Hard	1.82	0	(1)
U.S. No. 2 Dark Northern Spring:			
14 percent	1.82	+4	2.04
15 percent	1.93	+4	2.01
U.S. No. 2 Hard Winter:			
13.5 percent	1.76	+2	1.88
Argentine	(1)	(1)	1.82
U.S. No. 2 Soft Red Winter	1.57	—1	1.77
Feedgrains:			
U.S. No. 3 Yellow corn	1.37	0	1.37
Argentine Plate corn	1.75	0	1.74
U.S. No. 2 sorghum	1.41	0	1.24
Argentine-Granifero	1.47	—2	1.24
Soybeans:			
U.S. No. 2 Yellow	2.80	0	2.86

[1] Not quoted.
Note: All quoted c.i.f. Rotterdam for 30- to 60-day delivery.

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